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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/534,813	05/13/2005	Kia Silverbrook	MJT002USNP	9051

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SILVERBROOK RESEARCH PTY LTD
393 DARLING STREET
BALMAIN, 2041
AUSTRALIA

EXAMINER	
SOLOMON, LISA	
ART UNIT	PAPER NUMBER
2861	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/534,813	SILVERBROOK ET AL.	
	Examiner	Art Unit	
	Lisa M. Solomon	2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 May 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-47* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-47* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 May 2005* is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *5/13/2005, 11/13/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement filed May 13, 2005 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-5, 17-21, and 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Silverbrook (6,019,457).

In re claim 1, *Silverbrook (457')* teaches an ink jet printhead (100, Fig. 5) comprising: a plurality of nozzles (110, Fig. 6) [Column 1 lines 64-65]; and at least one respective heater element (120, Fig. 6) corresponding to each nozzle (110) [Column 1 line 67-Column 2 line 3], wherein each heater element (120) is arranged to be in thermal contact with a bubble forming liquid [Column 1 line 64-Column 2 line 3], each heater element (120) is configured to heat at least part of the bubble forming liquid to a temperature above its boiling point to form a gas bubble therein [Column 12 lines 44-49], thereby to cause the ejection of a drop of an ejectable liquid through the nozzle

(110) corresponding to that heater element (120) [Column 12 lines 50-51], and each heater element (120) is configured such that an actuation energy of less than 180 nanojoules (nJ) is required to be applied to that heater element (120) to heat that heater element (120) sufficiently to form a bubble in the bubble forming liquid thereby to cause the ejection of a drop of the ejectable liquid through a nozzle (110) [Column 19 lines 9-10, See also Figs. 24-31].

Although, Silverbrook (457') does not explicitly teach the actuation energy of less than 180 nJ, Silverbrook (457') does teach that any reduction in heater energy allows the power dissipation to be reduced without affecting print speed. From this teaching it would have been obvious to one of ordinary skill in the art at the time the invention was made that an actuation energy of less than 180 nJ would be included in this teaching of Silverbrook (457') for the purposes of providing an efficient power dissipation [Column 18 lines 66-67].

In re claim 2, *Silverbrook (457')* teaches the printhead (100) of claim 1 being configured to support the bubble forming liquid in thermal contact with each said heater element (120), and to support the ejectable liquid adjacent each nozzle [See Figs. 6-9 and 12].

In re claim 3, *Silverbrook (457')* teaches the printhead (100) of claim 1 wherein the bubble forming liquid and the ejectable liquid are of a common body of liquid [See Figs. 24-31].

In re claim 4, *Silverbrook (457')* teaches the printhead (100) of claim 1 being configured to print on a page and to be a page-width printhead [Column 2 lines 19-22].

In re claim 5, *Silverbrook (457')* teaches the printhead (100) of claim 1 wherein the actuation energy is less than 120 nJ [Column 19 lines 9-10].

Although, Silverbrook (457') does not explicitly teach the actuation energy of less than 120 nJ, Silverbrook (457') does teach that any reduction in heater energy allows the power dissipation to be reduced without affecting print speed. From this teaching it would have been obvious to one of ordinary skill in the art at the time the invention was made that an actuation energy of less than 120 nJ would be included in this teaching of Silverbrook (457') for the purposes of providing an efficient power dissipation [Column 18 lines 66-67].

In re claim 17, *Silverbrook (457')* teaches a printer system [Column 2 lines 5-8] incorporating a printhead (100, Fig. 5), the printhead (100) comprising: a plurality of nozzles (110, Fig. 6) [Column 1 lines 64-65]; and at least one respective heater element (120, Fig. 5) corresponding to each nozzle (110) [Column 1 line 67-Column 2 line 3], wherein each heater element (120) is arranged to be in thermal contact with a bubble forming liquid [Column 1 line 64-Column 2 line 3], each heater element (120) is configured to heat at least part of the bubble forming liquid to a temperature above its boiling point to form a gas bubble therein [Column 12 lines 44-49], thereby to cause the

ejection of a drop of an ejectable liquid through the nozzle (110) corresponding to that heater element (120) [Column 12 lines 50-51], and each heater element (120) is configured such that an actuation energy of less than 180 nanojoules (nJ) is required to be applied to that heater element (120) to heat that heater element (120) sufficiently to form a bubble in the bubble forming liquid thereby to cause the ejection of a drop of the ejectable liquid through a nozzle (110) [Column 19 lines 9-10, See also Figs. 24-31].

Although, Silverbrook (457') does not explicitly teach the actuation energy of less than 180 nJ, Silverbrook (457') does teach that any reduction in heater energy allows the power dissipation to be reduced without affecting print speed. From this teaching it would have been obvious to one of ordinary skill in the art at the time the invention was made that an actuation energy of less than 180 nJ would be included in this teaching of Silverbrook (457') for the purposes of providing an efficient power dissipation [Column 18 lines 66-67].

In re claim 18, *Silverbrook (457')* teaches the system of claim 17 being configured to support the bubble forming liquid in thermal contact with each said heater element (120), and to support the ejectable liquid adjacent each nozzle [See Figs. 6-9 and 12].

In re claim 19, *Silverbrook (457')* teaches the system of claim 17 wherein the bubble forming liquid and the ejectable liquid are of a common body of liquid [See Figs. 24-31].

In re claim 20, *Silverbrook (457')* teaches the system of claim 17 1 being configured to print on a page and to be a page-width printhead [Column 2 lines 19-22].

In re claim 21, *Silverbrook (457')* teaches the system of claim 17 wherein the actuation energy is less than 120 nJ [Column 19 lines 9-10].

Although, Silverbrook (457') does not explicitly teach the actuation energy of less than 120 nJ, Silverbrook (457') does teach that any reduction in heater energy allows the power dissipation to be reduced without affecting print speed. From this teaching it would have been obvious to one of ordinary skill in the art at the time the invention was made that an actuation energy of less than 120 nJ would be included in this teaching of Silverbrook (457') for the purposes of providing an efficient power dissipation [Column 18 lines 66-67].

In re claim, 33, *Silverbrook (457')* teaches a method of ejecting a drop of an ejectable liquid from a printhead (100, Fig. 5), the printhead (100) comprising a plurality of nozzles (110, Fig. 6) [Column 1 lines 64-65] and at least one respective heater element (120, Fig. 6) corresponding to each nozzle (110) [Column 1 line 67-Column 2 line 3], the method comprising the steps of: applying an actuation energy of less than 180 nJ to at least one heater element (120) corresponding to a said nozzle (110) [Column 19 lines 9-10]; heating that at least one heater element (120) by said step of applying an actuation energy, thereby to heat at least part of a bubble forming liquid

which is in thermal contact with that at least one heated heater element (120) to a temperature above the boiling point of the bubble forming liquid [Column 1 line 64-Column 2 line 3, Column 12 lines 44-49]; generating a gas bubble in the bubble forming liquid by said step of heating [Column 12 lines 48-49, See Fig. 26], and causing the drop of ejectable liquid to be ejected through the nozzle (110) corresponding to the at least one heated heater element (120) by said step of generating a gas bubble [Column 12 lines 50-51].

Although, Silverbrook (457') does not explicitly teach the actuation energy of less than 180 nJ, Silverbrook (457') does teach that any reduction in heater energy allows the power dissipation to be reduced without affecting print speed. From this teaching it would have been obvious to one of ordinary skill in the art at the time the invention was made that an actuation energy of less than 180 nJ would be included in this teaching of Silverbrook (457') for the purposes of providing an efficient power dissipation [Column 18 lines 66-67].

In re claim 34, *Silverbrook (457')* teaches the method of claim 33 comprising, before said step of heating, the steps of: disposing the bubble forming liquid in thermal contact with the heater elements (120); and disposing the ejectable liquid adjacent the nozzles (110) [Column 1 line 64-Column 2 line 3, See Figs. 6-9 and 12].

In re claim 35 *Silverbrook (457')* teaches the method of claim 33 wherein the bubble forming liquid and the ejectable liquid are of a common body of liquid [See Figs. 24-31].

In re claim 36, *Silverbrook (457')* teaches the method of claim 33 wherein, in said step of applying an actuation energy, the actuation energy is less than 120 nJ [Column 19 lines 9-10].

Although, Silverbrook (457') does not explicitly teach the actuation energy of less than 120 nJ, Silverbrook (457') does teach that any reduction in heater energy allows the power dissipation to be reduced without affecting print speed. From this teaching it would have been obvious to one of ordinary skill in the art at the time the invention was made that an actuation energy of less than 120 nJ would be included in this teaching of Silverbrook (457') for the purposes of providing an efficient power dissipation [Column 18 lines 66-67].

4. Claims 6, 9, 13-14, 16, 22, 25, 29-30, 32, 37, 40, 44-45, and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Silverbrook (6,019,457) in view of Kubby (5,706,041).

In re claim 6, *Silverbrook (457')* teaches the printhead of claim 1 [see rejection above]. However, Silverbrook (457') does not teach, wherein each heater element is in the form of a suspended beam, arranged for being suspended over at least a portion of the bubble forming liquid so as to be in thermal contact therewith.

Kubby (041') teaches wherein each heater element is in the form of a suspended beam, arranged for being suspended over at least a portion of the bubble forming liquid so as to be in thermal contact therewith [Column 3 lines 50-53; 55-61; 64-Column 4 line 4, Column 5 lines 4-11].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide each heater element to be in the form of a suspended beam, arranged to be suspended over at least a portion of the bubble forming liquid so as to be in thermal contact with the liquid as taught by Kubby (041') in the printhead of Silverbrook (457') for the purposes of providing heating ejectable liquid in a printhead [Kubby (041') Column 4 lines 1-2].

In re claim 9, *Silverbrook (457')* teaches the printhead of claim 1 [see rejection above]. However, Silverrook (457') does not teach wherein each heater element has two opposite sides and is configured such that a said gas bubble formed by that heater element is formed at both of said sides of that heater element.

Kubby (041') teaches wherein each heater element has two opposite sides and is configured such that a said gas bubble formed by that heater element is formed at both of said sides of that heater element [Column 4 lines 23-35; 44-52; 59-66].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide each heater element to have two opposite sides and configured such that a gas bubble formed by the heater element is formed at both sides of the heater element as taught by Kubby (041') in the printhead of Silverbrook (457') for

the purposes of creating a large bubble in which more ejectable liquid would be ejected than with a heater element with one side [Kubby (041') Column 4 lines 60-66].

In re claim 13, *Silverbrook (457')* teaches the printhead of claim 1 comprising a plurality of nozzle chambers, each corresponding to a respective nozzle, and a plurality of said heater elements being disposed within each chamber [Column 1 line 64-Column 2 line 3]. However, Silverbrook (457') does not teach the heater elements within each chamber being formed on different respective layers to one another.

Kubby (041') teaches the heater elements within each chamber being formed on different respective layers to one another [Column 4 lines 32-37; 44-50].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the heater elements in each chamber to be formed on different respective layers to one another as taught by Kubby (041') in the printhead of Silverbrook (457') for the purposes of allowing heat to dissipate upward and downward [Kubby (041') Column 4 lines 50-52].

In re claim 14, *Silverbrook (457')* teaches the printhead of claim 1 [see rejection above]. However, Silverbrook (457') does not teach wherein each heater element is formed of solid material more than 90% of which, by atomic proportion, is constituted by at least one periodic element having an atomic number below 50.

Kubby (041') teaches wherein each heater element is formed of solid material more than 90% of which, by atomic proportion, is constituted by at least one periodic element having an atomic number below 50 [Column 4 lines 35-50, See also Fig. 4].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide each heater element to be formed of solid material more than 90% of which, by atomic proportion, is consitituted by at least one periodic element having an atomic number below 50 as taught by Kubby (041') in the printhead of Silverbrook (457') for the purposes of creating the heating element [Kubby 041') Column 3 lines 58-61, Column 4 lines 44-50].

In re claim 16, *Silverbrook (457')* teaches the printhead of claim 1 [see rejection above]. However, Silverbrook (457') does not teach wherein each heater element is substantially covered by a conformal protective coating, the coating of each heater element having been applied substantially to all sides of the heater element simultaneously such that the coating is seamless.

Kubby (041') teaches wherein each heater element is substantially covered by a conformal protective coating, the coating of each heater element having been applied substantially to all sides of the heater element simultaneously such that the coating is seamless [Column 4 lines 38-43].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a conformal protective coating substantially covering each heater element, the coating of each heater element having been applied to all

sides of the heater element simultaneously such that the coating is seamless as taught by Kubby (041') in the printhead of Silverbrook (457') for the purposes of providing protection from the corrosion of the ejectable liquid [Column 4 lines 15-17].

In re claim 22, *Silverbrook (457')* teaches the printer system of 17 [see rejection above]. However, Silverbrook (457') does not teach, wherein each heater element is in the form of a suspended beam, arranged for being suspended over at least a portion of the bubble forming liquid so as to be in thermal contact therewith.

Kubby (041') teaches wherein each heater element is in the form of a suspended beam, arranged for being suspended over at least a portion of the bubble forming liquid so as to be in thermal contact therewith [Column 3 lines 50-53; 55-61; 64-Column 4 line 4, Column 5 lines 4-11].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide each heater element to be in the form of a suspended beam, arranged to be suspended over at least a portion of the bubble forming liquid so as to be in thermal contact with the liquid as taught by Kubby (041') in the printhead of Silverbrook (457') for the purposes of providing heating ejectable liquid in a printhead [Kubby (041') Column 4 lines 1-2].

In re claim 25, *Silverbrook (457')* teaches the printer system of 17 [see rejection above]. However, Silverbrook (457') does not teach wherein each heater element has

two opposite sides and is configured such that a said gas bubble formed by that heater element is formed at both of said sides of that heater element.

Kubby (041') teaches wherein each heater element has two opposite sides and is configured such that a said gas bubble formed by that heater element is formed at both of said sides of that heater element [Column 4 lines 23-35; 44-52; 59-66].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide each heater element to have two opposite sides and configured such that a gas bubble formed by the heater element is formed at both sides of the heater element as taught by Kubby (041') in the printhead of Silverbrook (457') for the purposes of creating a large bubble in which more ejectable liquid would be ejected than with a heater element with one side [Kubby (041') Column 4 lines 60-66].

In re claim 29, *Silverbrook (457')* teaches the printer system of 17 comprising a plurality of nozzle chambers, each corresponding to a respective nozzle, and a plurality of said heater elements being disposed within each chamber [Column 1 line 64-Column 2 line 3]. However, Silverbrook (457') does not teach the heater elements within each chamber being formed on different respective layers to one another.

Kubby (041') teaches the heater elements within each chamber being formed on different respective layers to one another [Column 4 lines 32-37; 44-50].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the heater elements in each chamber to be formed on different respective layers to one another as taught by Kubby (041') in the printhead of

Silverbrook (457') for the purposes of allowing heat to dissipate upward and downward [Kubby (041') Column 4 lines 50-52].

In re claim 30, *Silverbrook (457')* teaches the printer system of 17 [see rejection above]. However, Silverbrook (457') does not teach wherein each heater element is formed of solid material more than 90% of which, by atomic proportion, is constituted by at least one periodic element having an atomic number below 50.

Kubby (041') teaches wherein each heater element is formed of solid material more than 90% of which, by atomic proportion, is constituted by at least one periodic element having an atomic number below 50 [Column 4 lines 35-50, See also Fig. 4].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide each heater element to be formed of solid material more than 90% of which, by atomic proportion, is constituted by at least one periodic element having an atomic number below 50 as taught by Kubby (041') in the printhead of Silverbrook (457') for the purposes of creating the heating element [Kubby 041') Column 3 lines 58-61, Column 4 lines 44-50].

In re claim 32, *Silverbrook (457')* teaches the printer system of 17 [see rejection above]. However, Silverbrook (457') does not teach wherein each heater element is substantially covered by a conformal protective coating, the coating of each heater element having been applied substantially to all sides of the heater element simultaneously such that the coating is seamless.

Kubby (041') teaches wherein each heater element is substantially covered by a conformal protective coating, the coating of each heater element having been applied substantially to all sides of the heater element simultaneously such that the coating is seamless [Column 4 lines 38-43].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a conformal protective coating substantially covering each heater element, the coating of each heater element having been applied to all sides of the heater element simultaneously such that the coating is seamless as taught by Kubby (041') in the printhead of Silverbrook (457') for the purposes of providing protection from the corrosion of the ejectable liquid [Column 4 lines 15-17].

In re claim 37, *Silverbrook (457')* teaches the method of claim 33 [see rejection above]. However, wherein each heater element is in the form of a suspended beam, the method further comprising, prior to the step of heating, the step of disposing the bubble forming liquid such that the heater elements are positioned above, and in thermal contact with, at least a portion of the bubble forming liquid.

Kubby (041') teaches wherein each heater element is in the form of a suspended beam [Column 3 lines 50-53; 55-61; 64-Column 4 line 4, Column 5 lines 4-11] and prior to the step of heating, the step of disposing the bubble forming liquid such that the heater elements are positioned above, and in thermal contact with, at least a portion of the bubble forming liquid [Column 5 lines 4-11].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide each heater element to be in the form of a suspended beam and prior to heating disposing the bubble forming liquid such that the heater elements are positioned above, and in thermal contact with at least a portion of the bubble forming liquid as taught by Kubby (041') in the printhead of Silverbrook (457') for the purposes of increasing the overall heat-transference efficiency of the printhead [Kubby (041') Column 5 lines 13-16].

In re claim 40, *Silverbrook (457')* teaches the method of claim 33 [see rejection above]. However, Silverbrook (457') does not teach wherein each heater element has two opposite sides and wherein, in the step of generating a gas bubble, the bubble is generated at both of said sides of each heated heater element.

Kubby (041') teaches wherein each heater element has two opposite sides and is configured such that a said gas bubble formed by that heater element is formed at both of said sides of that heater element [Column 4 lines 23-35; 44-52; 59-66].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide each heater element to have two opposite sides and configured such that a gas bubble formed by the heater element is formed at both sides of the heater element as taught by Kubby (041') in the printhead of Silverbrook (457') for the purposes of creating a large bubble in which more ejectable liquid would be ejected than with a heater element with one side [Kubby (041') Column 4 lines 60-66].

In re claim 44, *Silverbrook (457')* teaches the method of claim 33 comprising the step of providing the printhead, wherein the printhead has a plurality of nozzle chambers, each chamber corresponding to a respective nozzle [Column 1 line 64-Column 2 line 3]. However, Silverbrook (457') the step of providing the printhead further including forming a plurality of said heater elements in each chamber such that the heater elements in each chamber are formed on different respective layers to one another.

Kubby (041') teaches the step of providing the printhead further including forming a plurality of said heater elements in each chamber such that the heater elements in each chamber are formed on different respective layers to one another [Column 4 lines 32-37; 44-50].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a step including forming the heater elements in each chamber to be formed on different respective layers to one another as taught by Kubby (041') in the printhead of Silverbrook (457') for the purposes of allowing heat to dissipate upward and downward [Kubby (041') Column 4 lines 50-52].

In re claim 45, *Silverbrook (457')* teaches the method of claim 33 [see rejection above]. However, Silverbrook (457') does not teach comprising the step of providing the printhead, wherein each heater element is formed of solid material more than 90%

of which, by atomic proportion, is constituted by at least one periodic element having an atomic number below 50.

Kubby (041') teaches the step of providing the printhead, wherein each heater element is formed of solid material more than 90% of which, by atomic proportion, is constituted by at least one periodic element having an atomic number below 50 [Column 4 lines 35-50, See also Fig. 4].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a method wherein each heater element to be formed of solid material more than 90% of which, by atomic proportion, is consitituted by at least one periodic element having an atomic number below 50 as taught by Kubby (041') in the printhead of Silverbrook (457') for the purposes of creating the heating element [Kubby 041') Column 3 lines 58-61, Column 4 lines 44-50].

In re claim 47, *Silverbrook (457')* teaches the method of claim 33 [see rejection above]. However, Silverbrook (457') does not teach comprising the step of providing the printhead, including applying to each heater element, substantially to all sides thereof simultaneously, a conformal protective coating such that the coating is seamless.

Kubby (041') teaches the step of providing the printhead, including applying to each heater element, substantially to all sides thereof simultaneously, a conformal protective coating such that the coating is seamless [Column 4 lines 38-43].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a step including applying to each heater element, substantially to all sides thereof simultaneously, a conformal protective coating such that the coating is seamless as taught by Kubby (041') in the printhead of Silverbrook (457') for the purposes of providing protection from the corrosion of the ejectable liquid [Column 4 lines 15-17].

Double Patenting

5. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

Claims 1-47 are rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1-47 of prior U.S. Patent No. 6,692,108. This is a double patenting rejection.

Independent claims of U.S. Patent Application 10/534,813	Independent claims of U.S. Patent No. 6,692,108
1. An ink jet printhead comprising: a plurality of nozzles; and at least one respective heater element corresponding to each nozzle, wherein each heater element is arranged to be in thermal contact with a bubble forming liquid, each heater element is configured to heat at least part of the bubble forming liquid to a	1. An ink jet printhead comprising: a plurality of nozzles; and at least one respective heater element corresponding to each nozzle, wherein each heater element is arranged to be in thermal contact with a bubble forming liquid, each heater element is configured to heat at least part of the bubble forming liquid to a

temperature above its boiling point to form a gas bubble therein, thereby to cause the ejection of a drop of an ejectable liquid through the nozzle corresponding to that heater element, and each heater element is configured such that an actuation energy of less than 180 nanojoules (nJ) is required to be applied to that heater element to heat that heater element sufficiently to form a bubble in the bubble forming liquid thereby to cause the ejection of a drop of the ejectable liquid through a nozzle.	temperature above its boiling point to form a gas bubble therein, thereby to cause the ejection of a drop of an ejectable liquid through the nozzle corresponding to that heater element, and each heater element is configured such that an actuation energy of less than 180 nanojoules (nJ) is required to be applied to that heater element to heat that heater element sufficiently to form a bubble in the bubble forming liquid thereby to cause the ejection of a drop of the ejectable liquid through a nozzle.
17. A printer system incorporating a printhead, the printhead comprising: a plurality of nozzles; and at least one respective heater element corresponding to each nozzle, wherein each heater element is arranged to be in thermal contact with a bubble forming liquid, each heater element is configured to heat at least part of the bubble forming liquid to a temperature above its boiling point to form a gas bubble therein, thereby to cause the ejection of a drop of an ejectable liquid through the nozzle corresponding to that heater element, and each heater element is configured such that an actuation energy of less than 180 nanojoules (nJ) is required to be applied to that heater element to heat that heater element sufficiently to form a bubble in the bubble forming liquid thereby to cause the ejection of a drop of the ejectable liquid through a nozzle.	17. A printer system incorporating a printhead, the printhead comprising: a plurality of nozzles; and at least one respective heater element corresponding to each nozzle, wherein each heater element is arranged to be in thermal contact with a bubble forming liquid, each heater element is configured to heat at least part of the bubble forming liquid to a temperature above its boiling point to form a gas bubble therein, thereby to cause the ejection of a drop of an ejectable liquid through the nozzle corresponding to that heater element, and each heater element is configured such that an actuation energy of less than 180 nanojoules (nJ) is required to be applied to that heater element to heat that heater element sufficiently to form a bubble in the bubble forming liquid thereby to cause the ejection of a drop of the ejectable liquid through a nozzle.
33. A method of ejecting a drop of an ejectable liquid from a printhead, the printhead comprising a plurality of nozzles and at least one respective heater element corresponding to each nozzle, the method comprising the steps of: applying an actuation energy of less than 180 nJ to at least one heater element corresponding to a said nozzle; heating that at least one heater element by said step of	33. A method of ejecting a drop of an ejectable liquid from a printhead, the printhead comprising a plurality of nozzles and at least one respective heater element corresponding to each nozzle, the method comprising the steps of: applying an actuation energy of less than 180 nJ to at least one heater element corresponding to said nozzle; heating that at least one heater element by said step of

applying an actuation energy, thereby to heat at least part of a bubble forming liquid which is in thermal contact with that at least one heated heater element to a temperature above the boiling point of the bubble forming liquid; generating a gas bubble in the bubble forming liquid by said step of heating, and causing the drop of ejectable liquid to be ejected through the nozzle corresponding to the at least one heated heater element by said step of generating a gas bubble.	applying an actuation energy, thereby to heat at least part of a bubble forming liquid which is in thermal contact with that at least one heated heater element to a temperature above the boiling point of the bubble forming liquid; generating a gas bubble in the bubble forming liquid by said step of heating; and causing the drop of ejectable liquid to be ejected through the nozzle corresponding to the at least one heated heater element by said step of generating a gas bubble.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lisa M. Solomon whose telephone number is (571) 272-1701. The examiner can normally be reached on Monday - Friday from 8:00 am - 4:30 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Luu can be reached on (571) 272-7663. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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